KOMARASAMY GOUNDER MAT.HR.SEC.SCHOOL - KURUMANDUR

MONTHLY TEST – AUGUST – 2023

X – STANDARD

MATHEMATICS (25.08.2023)

TIME : 1.30 HOURS ***MAXIMUM MARKS : 50***

PART – A

I.CHOOSE THE CORRECT ANSWER : **6 X 1 = 6**

1. The volume (in cm^2) of the greater sphere that can be cut off from a cylindrical log of wood of base radius 1 cm and height 5 cm is ……

a) $\frac{3}{4}\pi$ **b) $\frac{10}{3}\pi$** **c) $\frac{4}{3}\pi$** **d) $\frac{20}{3}\pi$**

2. The ratio of the volumes of cylinder , a cone and a sphere , if each has the same diameter and same height is

a) 3 : 1 : 2 **b) 1 : 2 : 3** **c) 2 : 1 : 3** **d) 1 : 3 : 2**

3. A cone of height 24 cm is made up of modeling clay . A child reshapes it in the form of a cylinder of same radius as cone. Find the height of the cylinder.

a) 512 cm **b) 8 cm** **c) 2 cm** **d) 6 cm**

4. If the mean and coefficient of variation of a data are 4 and 87.5 % then the standard deviation is

a) 3 **b) 3.2** **c) 3.5** **d) 4.5**

5. Variance of first 20 natural numbers is ……..

a) 33.52 **b) 33.25** **c) 33.35** **d) 33.55**

6. If the sum and mean of a data are 407 and 11 respectively , then the number of observations in the data are ……..

a) 27 **b) 26.5** **c) 37** **d) 73**

PART – B

II.ANSWER ANY SIX OF THE FOLLOWING : **6 X 2 = 12**

QUESTION NO "12" IS COMPULSORY.

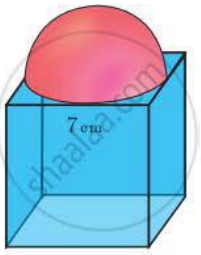
7. The mean of a data is 25.6 and its coefficient of variation is 18.75. Find the standard deviation.

8. The standard deviation and mean of a data are 6.5 and 12.5 respectively . Find the coefficient of variation.

9. The range and the smallest value of a set of data are 36.8 and 13.4 respectively ,then find the largest value.

10. Find the standard deviation of the first 21 natural numbers.

11. As shown in figure a cubical block of side 7 cm is surmounted by a hemisphere. Find the surface area of the solid.



12. The range of a set of data is 22.67 and the largest value is 80.08. Find the smallest value.

13. An aluminium sphere of radius 12 cm is melted to make a cylinder of radius 8 cm. Find the height of the cylinder.

14. If n = 5 $\bar{x}$ = 6, $\sum x^2$ = 765 then calculate the coefficient of variation.

PART – C

III.ANSWER ANY FIVE OF THE FOLLOWING : 5 X 5 = 25

(QUESTION NUMBER "18" IS COMPULSORY)

15.The total marks scored by two students Priya and Vidhya in 5 subject are 460 and 480 with standard deviation of 4.6 and 204 respectively. Who is more consistant in performance.

16. The temperature of two cities A and B in the winter season are given below.

Temperature of city A (In degree Celsius)	**18**	**20**	**22**	**24**	**26**
Temperature of city B (In degree Celsius)	**11**	**14**	**15**	**17**	**18**

17. The mean and variance of seven observations are 8 and 16 respectively .If five of these are 2 , 4 , 10 , 12 , and 14.then find the remaining two observation.

18. The number of televisions sold in each day of a week are 13 , 8 , 4 , 9 , 7 , 12 , 10 . Find its standard deviations.

19. Water is flowing at the rate of 15 km per hour through a pipe of diameter 14 cm into a rectangular tank which is 50 m long and 44 m wide. Find the time in which the level of water in the tanks will rise 21 cm.

20. Seenu's house has an overhead tank in the shape of a cylinder. This is filled by pumping water from a sump (underground tank) which is in the shape of a cuboid. The sump has dimensions 2 m × 1.5 m × 1 m. The overhead tank has its radius of 60 cm and height 105 cm. Find the volume of the water left in the sump after the overhead tank has been completely filled with water from the sump which has been full, initially.

21. A shuttlecock used for playing badminton has the shape of a frustum of a cone is mounted on a hemisphere. The diameters of the frustum are 5 cm and 2 cm. The height of the entire shuttlecock is 7 cm. Find its external surface area.

PART – D

IV.ANSWER THE FOLLOWING : 1 X 7 = 7

22. Kavin is the winner in a marathon race of 12 km distance . He ran at the uniform speed of 12 km/hr and reached the destination in 1 hour. He was followed by Moorthy , Kumar , Ram , and Vasanth with their respective speed of 6 km/hr, 4km/hr , 3 km/hr ans 2 km/hr. And , they covered the distance in 2hrs , 3 hrs , 4 hrs and 6 hrs respectively ,

Draw the speed – time graph and use it to find the time taken to Aswin with his speed of 2.4 km / hr.

Or

Graph the following linear function $y = \frac{1}{2}x$. Identify the constant of variation and verify it with the graph. Also

i) Find y When x = 9 ii) find x When y = 7.5